PURCELL PARK CONSTRUCTION
SUMMER 2009

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Purcell Park Pond Proposal

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Proposal

The pond at Purcell Park is in very bad condition. It is filled with organic matter that is robbing the oxygen from the water. Algae and other vegetation are flourishing because the nutrient abundance from runoff and Siebert Creek are hindering the pond. With very little shade, the high temperatures deprive the pond of oxygen thus organic matter builds up to the point which it's at now. Bacteria, at this point, use up all the remaining oxygen in order to try and break down the matter causing the pond to become eutrophic. By adding an aerator to the pond at Purcell Park, the dissolved oxygen levels will increase and the temperature with decrease slightly, allowing the bacteria and the invertebrates/vertebrates to survive and work. An aerator would not only add oxygen, but it would churn up the organic matter along the bottom allowing methane and other gasses to be released and enable more microbial activity. This is also true for the winter months. As the pond crusts over with ice, the gasses cannot release, thus killing the fish and macroinvertebrates that would be living in that environment. With better water being released into Blacks Run it will further help the enhancement. This pond, in several different ways, collects sediment which in turn helps Blacks Run rid itself of urbanization. An aeration unit is designed to stays operating year around for up to 2 years in order to affectively reestablish the ecosystem. Once reestablished an umbrella typed aerator can replace the existing aerator and enhance the aesthetics.

There will be a need for a pump house for the aeration pump to stay in protecting it from the elements and the general public. Various pump house ideas can be brought to my attention, some of which can be on the ground surface or below the surface with adequate ventilation.

There will also be aquatic wildlife added to the pond once the aeration process has taken effect. This is known as the "pond package" from Farley Fish Farm. These will only be native species in order to reduce the worry of individuals leaving the pond to surrounding waterways and help further the concept of native environments throughout Virginia. A list of fish species can be found further down in this report.

Pond sq ft: 36,900 (¾ of a acre)
Pond depth: Average 6'

Cost:

Air Pump: 1/4 HP High Volume Rotary Value Kit

Species	**Number**
Regular Bluegill	600
Red Ear Sunfish	150
Fathead Minnows	8 IBS or ~1200
Largemouth Bass	75
Triploid Grass Carp (triploid=sterile)	10

Construction:

As stated prior, the aeration pump will need to be placed into a pump house. After further review, it would be best for the unit to be placed semi-underground. Thoughts on the underground casement of the unit are as such:

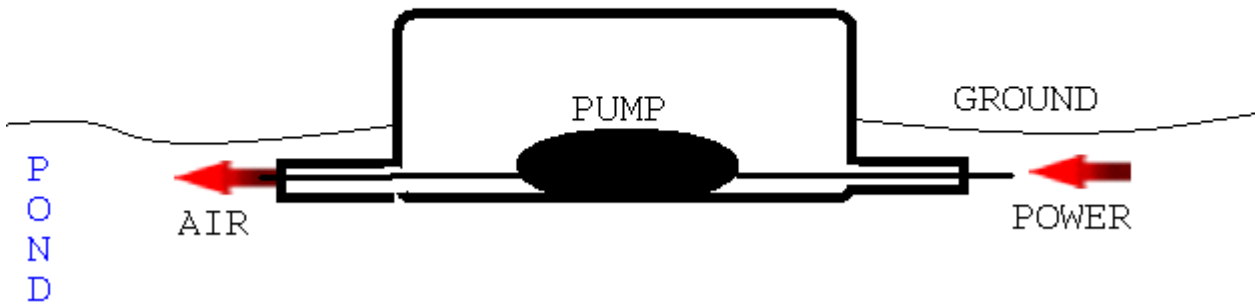
- Secondary junction box a quarter of the way into the surface.
- 2 holes allowing a power source into the casement as well as a hole allowing the air hoses out.

The top to this structure will be a secondary junction box with air slits along the sides. This will be, as stated prior, a temporary structure until the ecosystem is recovered and the aeration unit is replaced with a fountain. Actual structure positioning will be discussed at a later date in order to avoid the Swamp Oak root system and also the pond intake water pipe.

Completion:

At this time the aeration pump has been running smooth. Purcell Park Pond has started to lower itself in temperature and hold more oxygen. As this pump continues to operate more and more algae with break up and dismiss itself. Within Parks and Recreation, there were a number of individuals that demonstrated professionalism when it came to doing our part with the construction. These individuals were Justin Showalter, Matt Muterspaugh, Jeremy Harold, Ray Fifer, and Robert Shifflett.

SECONDARY JUNCTION BOX HOUSING



Purcell Park Pond Planting Proposal

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Proposal:

Shading for the pond at Purcell Park has become a top priority. This ¾ acre pond has a major problem with algae procreating at an intense rate causing fish kills, gas releases, organic build up, and also degraded water quality flushing into Blacks Run. An aeration unit proposal has been put into motion and at this time being maintained. In order to manipulate the procreation of the algae and various other organics, woody vegetation needs to be planted along the east side primarily and west side of the pond. 22 trees should be planted strategically along the bank in order to achieve shading while taking aesthetics and maintenance into account. The early stage of succession can also be manipulated in this riparian buffer by allowing mowing up to the juveniles and 25-50 feet from the pond. The riparian buffer at this location is not as important as the shading because there are no chemical applications on the area above the pond. Also, thick ground cover is already in existence protecting the bank as well as keeping various invasive and exotic weeds from growing and competing with the trees. As the juveniles age, the root system will anchor the banks even more and also become a primary filtration system.

Trees:

	Count
Cornus Florida (Dogwood)	*(3)*
Cercis canadensis (Red Bud)	(5)
Quercus alba (White Oak)	*(5)*
Quercus phellos *(Willow Oak)*	(9)

Cost:

Trees were purchased from Rodamer's Nursery at a cost of $100.00 per tree. An overall total of $2,200.00 will be reimbursed from DCR through grant 2007-WQIF-13.

Completion:

All 22 trees have been planted in the park. During this period of the year the trees will not continue to grow instead they will survive off the nutrients they have stored away until spring. Within Parks and Recreation

there were a number of individuals that demonstrated professionalism when it came to doing our part with the construction. These individuals were Justin Showalter, Jeremy Harold, Robert Shifflett, and Phil Curry.

Purcell Park Bridge Construction

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Proposal:

With the completion of the riparian buffer easement the ground work for the bridge construction could prevail. A specialized bridge would be manufactured with the thought that as the bridge aged the steel would weather and rust creating an aesthetically pleasing passage. These bridges would also have flooring that is known as "IPE" from the Brazilian rainforest, which would never weather or rot, but maintain the same structure for an extended number of years. At this time, 10-30-2009, the construction of the bridges have been completed and parks and recreation will follow up with the pouring of pervious concrete to make the bridges handicap accessible (ADA). Silver Lake Welding Service did a wonderful job on the bridge manufacturing, and without a doubt you couldn't ask for better men from Harrisonburg Construction. Harrisonburg Construction dug the footers, build the concrete structures, laid the IPE flooring to finalize everything, and lastly, they were there quickly whenever I called. Within Parks and Recreation there were a number of individuals that demonstrated professionalism when it came to doing our part with the construction. These individuals were Justin Showalter, Matt Muterspaugh, Jeremy Harold, Ray Fifer, Robert Shifflett, and David Levesque.

THANK YOU EVERYONE!